THE RHYTHM METHOD: TWO INDIAN EXPERIMENTS. II

By C. P. BLACKER

In the first of these articles, which appeared in the July 1955 *number of the* EUGENICS REVIEW, *the following subjects were discussed: the importance in the world, which contains about* 430 *million Roman Catholics, of the rhythm method; the background of the two experiments which were requested by the Indian Government and organized by the World Health Organization; three adaptations of the rhythm method; and the findings of the first of the two experiments which was carried out in the rural area of Ramanagaram, in Mysore.*

In this article, the second of the two experiments—that conducted in the (urban) area of New Delhi—is summarized, and the rhythm method is critically assessed, from the standpoints of its practicability and effectiveness, in the light of the findings of both experiments.

The Lodi Experiment: Differences from Ramanagaram

Compared to the Ramanagaram experiment that conducted at Lodi, a suburb of New Delhi, was simple. The main differences in design were the following:

There was no control population comparable to the sixteen control villages at Ramanagaram; no household survey was attempted; only wives were interviewed, though somewhat unsuccessful efforts were made to induce husbands to accompany their wives to the clinic; there was no travelling by the workers since the experimental population lived in a large block of buildings; the work was centralized in a clinic (of which there was no counterpart at Ramanagaram) where women were interviewed and physically examined and where a better rapport could be established than in the home; the educational standard of the couples was much higher than at Ramanagaram; the instruction or observation stage, which lasted six months at Ramanagaram, was reduced to three months at Lodi; and the staff, in which over fifty people were at one time or another employed at Ramanagaram, here consisted of eight persons who required little preliminary training.

But a difficulty, almost unknown at Ramanagaram, confronted the workers at Lodi: a relatively sophisticated population was already well acquainted with other birth control methods than the rhythm. Hence in estimating the value of this method, allowances had to be made for the fact that, after receiving instruction in the rhythm, many of the women resorted either alternatively or at the same time to other methods. Indeed the inquiry disclosed that the simultaneous use of the rhythm and another method protected the woman against pregnancy better than did the rhythm method alone.

The report gives full particulars of all these features of the experiment upon which but brief comments are here appropriate.

Housing conditions. Lodi colony is a housing unit built by the Government of India. It is occupied by Government servants who live in three types of apartments: the largest contains three rooms, a bath and a kitchen, and the smallest one room. The intermediate type (known as the B Blocks) wherein the experimental population lived, contains two rooms, a bath and a kitchen. The rental values are determined by the salary scales of the occupants, whose monthly incomes ranged from Rupees 250 to 400.

Experimental population. All areas of India were represented. A sub-sample of nearly 400 couples, classified by language, contained 57 per cent who spoke Punjabi and 30 per cent Hindustani. Speakers of

Bengali, Sindhi, Tamil and other south Indian languages were represented.

Educational standards were high. Of a sample of 265 couples, who when the experiment was wound up, were active in the experiment, no less that 262 of the husbands and 127 of the wives had matriculated or been to college; an additional 100 wives had received primary education. (In the Ramanagaram experiment but 19 per cent of the husbands and 2 per cent of the wives could read.)

Clinic Organization and Rhythm Advice. The Family Planning Centre or clinic, which was opened on July 15th, 1952, was appropriately situated at the back of a Maternity and Child Welfare Centre. A lady doctor was in charge. We are told that she "interviewed each patient, gave each patient elementary instructions on the nature and functionings of her reproductive organs, calculated individual rhythms, made pelvic examinations, and gave patients such general advice, both medical and personal, as varying situations required." There were seven people on the staff apart from the doctor: these were three social workers (one a man), a nurse, a health visitor, a technical assistant (male) and a clerk typist.

The assignment of "baby days" depended on the number of cycles of which onset dates (i.e. the dates of the onset of menstruation) were reported. The practice apparently followed at Ramanagaram of giving no advice for the first three months (during which many women became pregnant and others lost interest) was not here followed. If, at the first visit (after a single onset), a woman protested that total abstinence was impossible for herself and her husband, she was told that she would be fairly safe, provided that her menses were reasonably regular, if coitus took place only during the seven days preceding the next expected onset. Or if the couple had previously been using another method (coitus interruptus and the condom were the most commonly used) she was told that she could continue to use that method. At later visits, when further onset days were reported, the rhythm advice was revised, the number of "baby days" being if possible reduced. Menstrual calendars were issued. No mention is made of the beads which, at Ramanagaram, were offered to every woman. In the apparently total absence of illiteracy, they were presumably not necessary. We are told that agreeably cordial relations developed between the clinic staff and the visiting wives.

Previous Use of Other Methods. An attitude survey was conducted in the women's homes at Lodi as at Ramanagaram. This clearly demonstrated that the idea of birth control was already familiar to the urban population of Lodi. Thus of 1,274 couples covered by the survey, no less than 443 (34 per cent) declared that they had previously used a birth control method. Much the most frequently employed of these methods was the condom; this was said to have been used by about 180 (41 per cent) of these 433 couples. About seventy-five couples (17 per cent) had previously used the rhythm method. It is perhaps surprising that only about fifty (11 per cent) said that they had used coitus interruptus, and only eighteen (4 per cent) the diaphragm or cap.

But we are told in the report that the question of the previous use of birth control methods was again broached when the woman visited the clinic. There the rapport was better than in the home, where the attitude survey was conducted. (In the home, children and others could sometimes overhear what was said in the interview.) A larger proportion of women admitted during the clinic interview than in the attitude survey that they had previously used other methods of birth control. Thus the figures above given, though rather surprisingly large, especially for the use of the condom, may well underrate the previous use of other methods, especially of coitus interruptus.

The Lodi Figures

The following figures, which are here set out in the same form as those for the Ramanagaram and Bannikuppe experiments, are I think, approximately correct. They do not come out entirely clearly from the account. A complication more characteristic of Lodi

than of the other two places is the way in which women who had been dropped from the list of " active cases " revisited the clinic and were reinstated on the active list. The compactness of the area of experiment and the presence of a clinic at the centre doubtless contributed to these vicissitudes.

Number of Couples included in Attitude Survey —1,274. Number of Couples, among the 1,274 who were willing to learn a method of birth control— 898.

(Particulars are given about 369 of the remaining 376 couples who did not wish to learn such a method. These women are classifiable in groups. More than half of the 369, namely, 191 couples, wanted more children. Two of the other groups had no equivalents in Ramanagaram, namely, sixty-five couples who were already using a method with which they were satisfied, and eighteen couples where the women had been sterilized. Thirty-three couples said that they had no need of a method since there was a sufficient interval between their pregnancies; twenty-three couples thought they could not conceive, being too old or ill; and twenty-two did not believe in birth control.

Number of women, among the 898 " willing to learn " couples, who reported menses—558.

This number of women reporting menses—558 out of 898 " willing to learn " couples—represents a proportion (62 per cent) which is double that in either Ramanagaram (30 per cent) or Bannikuppe (28 per cent). This pronounced difference is not discussed in the report. Of the remaining 360 women among the 898 couples, 174 (19 per cent) reported that they were pregnant— a higher proportion than at Ramanagaram (12 per cent); and 186 (21 per cent) were neither pregnant nor menstruating—a much lower proportion than at Ramanagaram (38 per cent).

Number of women, among the 558, to whom rhythm advice was given in the course of the experiment—254.

(The reasons why the remaining 304 of the 558 women who reported menses were " dropped " (i.e. not given rhythm advice) are not clearly tabulated. The reasons may not have been ascertained, in all 304 women. But the reasons for which a sub-sample of a hundred of these 304 wome were " dropped " are given in a table. Preference for another method and " no faith in rhythm method " were declared by over half these 100 women.)

Number of women, among the 254, as to whom months of exposure to conception are known, different contraceptive measures being used (these women co-operated up till January 1st, 1954)— 231.

Number of women, among the 231, who used the rhythm method only—27.

Thus the whittling down of numbers was as drastic in the Lodi as in the Ramanagaram experiment, where the regular users of the rhythm method were finally reduced to thirty-nine. But of the 231 Lodi women, among whom the twenty-seven regular users of the rhythm method are included, the other 204 (unlike the Ramanagaram women) adopted other measures or combinations of measures. Some of the 204 used other methods (mostly coitus interruptus and the condom); some used no method or used a method irregularly; and some combined the rhythm method with others. This last group comprised ninety women (three times as numerous as the regular users of rhythm) who were better served by their combination of methods than were the twenty-seven by the sole and regular use of rhythm. The latter experienced three pregnancies in 159 months of exposure which gives the number of months of exposure per conception as fifty-three. The former (who combined the rhythm with other methods) experienced nine pregnancies in 642 months of exposure which gives a corresponding figure of seventy-one. (Those of the above-mentioned non-users of regular rhythm who employed other methods, and those who used no methods or other methods irregularly, fared less well than the regular users of rhythm. The figures for months of exposure of these two groups were thirty-six and twenty-four, which compare unfavourably with that of fifty-three for the regular users of rhythm.)

Acceptability and Effectiveness

The outcome of the Lodi experiment can be summed up from the standpoints of acceptability and effectiveness, though the number of women, and also the number of months of exposure, are disappointingly small—so small that no firm conclusion can be drawn. From the standpoint of acceptability, it seems that, of 231 women who were taught the rhythm method, only twenty-seven (11 per cent) used it regularly, the remaining 89 per cent preferring other

methods or no methods. From the standpoint of effectiveness (reliability) it seems that the regular use of the rhythm method is less effective in the ratio of fifty-three to seventy-one than the combination of the rhythm with other methods. The figure of fifty-three for Lodi is intermediate between those of 35 and 110 for Ramanagaram where the failure to confirm four suspected conceptions made it impossible to be more precise.

It was mentioned in the first of these articles that, in the rural area of Ramanagaram, women who used no birth control experienced about twenty months of exposure to risk of conception per pregnancy; in other words, after the end of lactation, it took them on average about twenty months to conceive again. The figure of fifty-three months for the regular users of rhythm at Lodi implies a near trebling of the basic period of twenty months. This result suggests that the regular use of rhythm, while far from ideal as a method of family planning, is definitely better than no method.

The Omnibus Rule

A small experiment with the "omnibus rule," which has been described above, involving 402 households, is summarised in the Report. (The "rule" calls for fifteen days abstinence from the 8th to the 22nd day inclusive.) The experiment was undertaken near Lodi at Aliganj which, we are told, is a colony of sweepers and peons who were completely illiterate but who held "very orthodox views." We are told that among them the idea of planned parenthood was quite unfamiliar. "The question 'Do you wish to have more children?' seems rather funny to them and some are so amused by it that they cannot control their laughter for minutes together. They have the firm belief that no earthly power can interfere with nature and what is destined must happen."

The figures, which do not emerge entirely clearly, appear to be as follows:

Number of households visited ..	402
Schedules filled	220
Number of couples, among the 220, wanting to learn a method	122
Number of women, among the 122, who were given the Omnibus Rule ..	39

There are no reports of the outcome of its use. It seems to be the view of the WHO organizer, and of some 150 persons who were being trained as social organizers by the Community Development Administration of India, to whom she explained the matter, that the omnibus rule should be "vigorously pressed" and that it was "suitable for mass teaching." But against this view is the concluding paragraph of the report on the Aliganj experiment: "This work in Aliganj has been in progress for so short a time that it is impossible to draw a final conclusion. It now appears, however, that few couples will adopt the omnibus rule because of the long period of abstinence which is required." We are therefore left in some doubt as to how far this method is thought to be suitable and worth pursuing.

Conclusions

It will be recalled that the Ramanagaram and Lodi studies had, as their aim, three measurements—of the acceptability of the rhythm method, of its effectiveness in reducing pregnancies in those who follow it, and (limited to Ramanagaram) of its effectiveness in reducing the birth rate of the community.

We are now in a position to consider what answers the two inquiries gave to these three questions.

Acceptability

The term "acceptability" has in this context two different meanings. The measure of the first (a) is how far the rhythm method is practicable by, or deemed appropriate for, and therefore taught to, a group of women who wish to use a method; the measure of the second (b) is how far the method is found satisfactory, and is used regularly in the manner taught, by a group of women who have begun to use it.

In what follows, the small Bannikuppe and Aliganj experiments will not be considered. Attention is only given to the Ramanagaram and Lodi experiments. It appears that the proportions of women in the above two

categories (a) and (b) differ rather conspicuously in the two experiments.

		per cent
Ramanagaram		
(*a*)	Of 811 " willing to learn " women, the rhythm was taught to 112	14
(*b*)	Of these 112 women, 41 followed the method regularly Or 5 per cent of the 811 " willing to learn " women.	37
Lodi		
(*a*)	Of 898 " willing to learn " women, the rhythm was taught to 254	28
(*b*)	Of these 254 women, 27 were known (when the experiment was closed), to be following the method regularly as taught Or 3 per cent of the 898 " willing to learn " women.	11

(Of the Lodi women, another 90 who had been taught the rhythm were combining it with another method. I have not included these in the (*b*) figure above because it was not part of the instructions that other methods should be used at the same time as the rhythm, and the fact that this was done suggests that the exclusive use of the rhythm was " unacceptable " to these women. The report tells us that 7·5 per cent (not 3 per cent as above given) of the 898 " willing to learn " women were known to be following the method regularly at the end of March 1954. But I do not understand how this figure is reached and the relevant data are not given.)

It will be seen that the proportions of " willing to learn " women to whom the rhythm was taught (groups (*a*) above) was twice as large in the urban population of Lodi as in the rural population of Ramanagaram (28 compared to 14 per cent) ; but that the proportion of women who, having been taught the rhythm, followed it regularly according to the prescribed method (groups (*b*) above), was more than three times higher in Ramanagaram than in Lodi (37 against 11 per cent).

The first difference (between the two (*a*) groups) was doubtless caused in large part by the more ambitious but less practicable design of the Ramanagaram experiment according to which a long " observation period " of three months was required before rhythm advice was given. Many women became pregnant or dropped out during this period. The difficulties of this requirement have been discussed above.

The second difference (between the two (*b*) groups) is clearly due in large part to the relative sophistication of the Lodi women compared to the others. Many of the former were familiar with other birth control methods before the experiment began ; and many continued to use them after they had been taught the rhythm method.

The question of the acceptability of the rhythm method can now be summed up, taking both experiments together. Of 1,709 women in both experiments who expressed willingness to learn the rhythm, sixty-eight or 4 per cent were following it regularly at the end of the short period (less than two years) during which the relevant part of the experiment lasted. The rhythm method was thus inapplicable to, or unacceptable by, over 95 per cent of " willing to learn " women.

This conclusion is scarcely favourable to the rhythm method.

Effectiveness

Owing to the high degree of impracticability and unacceptability of the method, the number of regular users of rhythm—sixty-eight in both experiments—is so small that no definite conclusion can be drawn. But a tentative assessment, albeit based on meagre data, is possible.

Effectiveness is here measured in terms of the number of months exposure to the risk of conception per pregnancy—in other words the number of months which elapse between the first onset of menstruation after a pregnancy (some might prefer to calculate from the end of lactation) to the next pregnancy. It was established that, in the general population of Ramanagaram, where methods of family planning were scarcely known but where abortions were not uncommon, the months of exposure averaged about twenty. The more effective the method, the larger the figure.

For the twenty-seven regular users of the rhythm method in Lodi, this figure was fifty-three—a little less than three times the number of months of freedom from pregnancy supposedly experienced by an unprotected Indian rural population. The Ramanagaram experiment produced no definite figure

because of a failure to confirm four suspected pregnancies; but it seems reasonable to suppose that it would not have been widely dissimilar from the Lodi figure of fifty-three months.

Judging from this figure, the rhythm method is moderately effective. In the Lodi experiment it seems not to be as effective as was a combination of the rhythm which other birth control methods, to which combination more than three times as many women resorted as used the rhythm method solely and regularly in the prescribed manner. Nevertheless, the rhythm method seems to measure up better in effectiveness than it does in acceptability—though the numbers on which the calculations for effectiveness are based are disappointingly small.

Effectiveness in Ramanagaram of the Rhythm Method in Reducing the Birth Rate of the Community

This question is mainly of interest because it reflects the spirit of optimism in which the experiment was planned.

Of thirty-nine (among forty-one) regular users of rhythm, two definite pregnancies and 221 months of exposure to pregnancy are recorded. On the generous supposition that, if they had used no method, these thirty-nine women would have borne twelve instead of two children, the effect on the birth rate in the fourteen villages would have been scarcely perceptible. It was above mentioned that the birth rate in these villages fluctuated by nine points between 1951 and 1953. Assuming a constant population of about 7,500 for the fourteen experimental villages (which figure is given in the Report*), births would have numbered about 340 in 1951 (when the birth rate is said to have been forty-five per thousand) and over 400 in 1953 (birth rate given as fifty-four per thousand). Hence the rhythm method, if followed regularly by but 5 per cent of the sexually active population, would have but small effects on the number of births and could have had little to do with the recorded fluctuations of the birth rate from year to year. Indeed, the figure of 5 per cent (of users of the rhythm method) would be smaller if, instead of being derived from the 811 "willing to learn" women, of whom forty-one used the rhythm regularly, it was based on the larger figure of 1,301 couples with wives under forty, who were recorded in the initial household survey. The Attitude Survey, it will be recalled, showed that a quarter of these couples did not wish to learn a method. But perhaps the matter can be approached more simply. We are told (Vol. 1, p. 7) that the family planning study was officially begun in Ramanagaram during May 1952 and (p. 49) that the report was written in March 1954. The report gives figures for the birth rate in the fourteen experimental villages of Ramanagaram from 1950 to 1953. The birth rate rose during the years 1951-1953 in a manner which scarcely suggests that efforts to familiarize the population with the rhythm method produced noteworthy results. The birth rate during these three years was as follows: 1951—45·0; 1952—50·0; 1953—54·0.

If the Ramanagaram findings are a reliable guide, it can be confidently said that the routine rhythm method as there taught will have no perceptible effects on the birth rate of the rural population of India unless it can be simplified and somehow made more generally acceptable.

Views of Authors of Report on Shortcomings of Rhythm Method

But the difficulties and defects, for the purpose in view, of the rhythm method are perhaps best conveyed by the words of the report itself. "A number of problems," we are told, "were presented . . . which have persisted without a solution." These problems arise from hesitation by the couples, irregularity of cycles, difficulties of abstinence, and difficulties in maintaining contact by visits. The report says:

(1) Quite a few couples vacillated for months between wanting to learn the method and not wanting to learn it.

* The figure of 7,564 is given in Volume 1, p.8, no date being specified. In Volume 11, p. 47, a larger figure of 8,740 is given for 1953.

(2) When the cycles of some of the women who had received the instructions became too irregular for a rhythm revision, the couples, failing to heed the cautions of the worker, and refusing to surrender the cards of beads, continued to follow the old rhythm.

(3) A number of couples have had great difficulty in abstaining the long period of baby days advised during the instruction stage, and either abandoned the method, or failed to follow it regularly.

(4) The inability of the workers to contact a couple on schedule often meant that the "baby days" would begin before the rhythm was given or revised. In many cases, coitus had taken place during the "baby days."

Yet another difficulty is worth quoting—a subjective difficulty felt by the workers in the experiment:

> The field workers, fully appreciative of the genuine and urgent desires of many couples to avoid unwanted pregnancies, have felt a deep moral responsibility for the outcome of the application of the method. Consequently, realizing the limitations of the rhythm method, they found it difficult at times to conduct the study with objectivity.

The Report includes a summary of findings and recommendations. Among the points made in the *summary* is the following:

> Whereas this study has been devoted to the examination of the rhythm method, at no time have the limitations of the method been ignored. In terms of eligibility alone, the method is of no value to a large number of couples who have need for it, i.e. couples with the wife in the early menarche, or approaching menopause, or nursing a young child. At these times the cycles tend to be too irregular for the confident use of the method.

Among the *recommendations* submitted by the authors of the Report is the following:

> The limitations of the rhythm method should be fully appreciated. Couples who, because of the women's irregular cycles, are ineligible for the rhythm method, and couples who are unable or unwilling to apply it, are among those who might be encouraged to use another family planning method. Hence it would seem appropriate to initiate studies in the acceptability and effectiveness of other family planning methods.

Value of the Two Experiments: Miscellaneous Comments

To many it may appear that the results of the two experiments were disappointing. Indeed, the abruptness with which they were terminated suggests that this view was taken by the sponsors of the experiments.

The two volumes, moreover, contain evidence that the haste with which the two experiments were closed was matched by the haste with which the two volumes were published. Many passages suggest that what was written as an interim report was hurriedly published, without appropriate revisions, as a final report. Thus one of the recommendations (Vol. 1, p. 82) is that "both studies should be continued preferably for another year"; and we are told (p. 70) that "at the end of another year . . . the volume of data should be substantially larger and should be given more detailed analysis than has been feasible hitherto." It is also said that "only after the termination of the study will it be possible to determine whether the birth rate in the experimental area was reduced." (p. 50).

The disappointing conclusions as to the practicability of the rhythm method and the meagre conclusions as to its effectiveness, coupled with the haste with which the experiments were terminated and the two volumes published, might lead some to form the opinion that the whole project misfired and failed. But this would be a superficial and unjust view. Information of great value was obtained and it is much to be hoped that, far from being disappointed with the outcome of their labours, Dr. Stone, Dr. Chandrasekaran, Dr. Wahlund, Mrs. Taylor and Miss Snyder, together with the workers they trained, will duly appreciate how large is the debt we owe to them. The workers at Ramanagaram especially, who had the ampler, more exacting and more difficult task, deserve our gratitude.

Perhaps the most important conclusion emerging from the two inquiries is that there exists a greater demand than was expected for information on family planning; that is to say that the *principle* of family planning was found to be widely acceptable. The following remarks are made in comment on the Lodi Attitude Survey:

> During the first month the WHO field workers

were in India, the non-technical people with whom they talked almost unanimously predicted that any suggestion of family planning would be rejected, especially by the village people. The comments ranged all the way from "people will never understand what you are talking about" to "they will stone you out of the village if you suggest such a thing." It seemed to be generally assumed that family planning was opposed to their religious beliefs.

The discrepancy between these statements and the findings of the investigation was striking.

It is then pointed out that the principle of family planning was favoured by 75 per cent of the women interviewed in the two experiments; and that this proportion is "three times the 25 per cent required by the draft plan." This is a noteworthy finding which fully justified the conduct of Attitude Surveys in both experiments. It suggests that, so to speak, the soil is ready; what is needed is the appropriate seed to plant in the soil. Of Lodi we are told that the need is "more for information about what family planning methods are available and desirable, and about where family planning services can be found rather than for motivating for family planning." Indeed, there were but "2 per cent of the total interviewed whose reasons appear to reflect a traditional or religious bias against family planning."

Another valuable lesson relates to the design of the Ramanagaram experiment. If the design of any social experiment is too ambitious, the statistical requirements being too rigorous, the project runs the risk of foundering on the human plane. The goose refuses to lay the golden egg. Dr. Chandrasekaran was doubtless fully aware of this awkward possibility. But in view of the rather searching nature of the questions posed by the Indian Government which sponsored the inquiries—one of the questions related to "the effectiveness of the rhythm method in reducing the birth rate of the community"—he had no alternative but to draw up a statistically sound plan. The result, however, was that the ambitiously conceived "control experiment" involving sixteen villages at Ramanagaram seems to have yielded little; and that the decision to keep the experimental population under observation for three months before giving them rhythm advice resulted in serious lapses (through unwanted pregnancies and waning interest) among couples who might otherwise have co-operated. The workers themselves seem to have become aware of the impracticably exacting requirements of the Ramanagaram experiment, and all will sympathise with how, "realising the limitations of the rhythm method, they found it difficult at times to conduct the study with objectivity." The reader of the report gains the impression that interest in the practical possibilities of the simple One Cycle and Omnibus Rules increased with the progress of the two main experiments—that it grew as awareness developed of the general unacceptability of the routine method. Criticisms from statisticians (to which doctors are extremely sensitive) are notoriously risked if social inquiries are not designed as rigorously as laboratory experiments; but enlightened statisticians appreciate the inferiority of human beings to laboratory animals as subjects for experiment, and they temper their requirements accordingly.

A criticism sometimes made of the rhythm method (mentioned at the beginning of this article) is that, in accordance with physiological expectations, most women are sexually readier during the "baby days" than during the "safe days" and that the method is therefore contrary to nature. This matter is difficult to test, and no attempt to test it was made in the two experiments.

Much is heard today of the possibilities of an oral method of contraception—most conveniently a pill to be taken by the women on each onset day; such an oral method, without impairing health or sexual spontaneity and without affecting subsequent fecundity or the well-being of later-born children, would prevent conception in the ensuing cycle. Do these two social experiments throw light on the acceptability of such an oral method to Indian women?

It is possible that the familiarity of rural women with abortifacient medicines would make it easy to introduce to them the principle of an oral method of regulating

pregnancy, different though the two procedures are. The Ramanagaram workers tried to obtain information about abortions, but without much success. We are told that "a number of women have said that 'medicine can be had from itinerant vendors or from someone in Ramanagaram'"; and that "although the knowledge about abortions is widespread, the villagers are unwilling to divulge the information." The report gives a list of home remedies which were reported as abortifacients. A verbatim conversation between a worker concerned to promote the use of the "omnibus rule" and a woman of Aliganj is reported:

Client: I have got three sons and three daughters. I do not want any more children. But in what way can you help me? The number which is destined for me must be born.

Worker: Yes, I know that, but still we can make some efforts and see if we can help ourselves.

Client: Will you give me some medicine? If so, I won't be able to pay you. My husband will get annoyed if he comes to know that I buy medicine for this purpose.

The implication seems to be that the woman would have accepted a medicine provided that it was supplied free of charge.

The Ramanagaram experiment brought vividly to light the extreme difficulty of teaching the rhythm method to a mainly illiterate and uneducated population and of testing its effectiveness in such a population. But it is conceivable that the same method might come better out of another kind of experiment. If, as part of a programme of preparation for marriage, young men and girls were taught enough physiology to familiarize them with the principle of the rhythm method, so that they embarked on marriage equipped with the requisite knowledge, many of the pitfalls encountered at Ramanagaram would be circumvented. But two considerable difficulties would nevertheless remain. They are that the menstrual cycle is apt to be irregular at both the menarche and menopause (the beginning and the end of reproductive life) so that the assigned "baby days" would then have to be numerous; and that abstinence is apt to be more difficult in the early than in the middle or late years of marriage. A paper by Dr. Chandrasekaran was above quoted which contained the statement that the number of days abstinence practised for religious reasons varied from two to 120 in Ramanagaram and from one to seventy-nine at Lodi. A woman with a consistently regular cycle or twenty-nine days would have eight "baby days" a month and therefore just under a hundred such days a year during which abstinence would be necessary. A variable cycle, imposing fourteen "baby days" per month, could demand an aggregate period of abstinence of half a year. About the same span (six months) of abstinence in the year is also required by the One Cycle and Omnibus Rules. How many couples, and of what ages, would find this period of abstinence practicable? These are important questions which call for further inquiry.

Another important aspect of the rhythm method is the degree to which irregularities of the cycle are influenced by emotional experiences. How far, for example, could the physical and emotional stimulus of coitus, especially intense in girls and young women, cause ovulation to take place earlier than it would otherwise do? In many mammals ovulation is geared to coitus. How far do women vary in such physiological reactiveness? Reactiveness of this kind may exist in small and as yet unsuspected degrees in most women; in some, especially during their early nubile years, it may be greater than in others. Such women would be relatively insecure from the risk of pregnancy during the post-menstrual or "early safe days" when coitus might expedite ovulation. Light might be thrown on this possibility if, in a large-scale investigation, which covered women of different ages, it were found that more unwanted pregnancies occurred among the younger women from intercourse between the end of menstruation and the first of the calculated "baby days" (the "early safe days") than from intercourse between the last of these days and the next onset day (the "late safe days").

How far could emotional experiences of an opposite kind—perhaps of an alarming or depressive character—cause ovulation to be

delayed? Can two ovulations, such as result in dizygotic twins, take place at different times in the cycle, one of them perhaps occurring after the last of the supposed "baby days"? Postponements of ovulation from whatever cause result in an unsuspected increase in the number of "baby days" and (in the absence of pregnancy) in the postponement of the next onset day. How many unwanted pregnancies resulting from "failures" of the rhythm method (regularly followed) are attributable to conceptions occurring abnormally early and abnormally late in the cycle? There might be a difference in the age distributions of the two types of failure; they might also be linked to the presence in certain women of indentifiable psychological or typological features. Would the discovery of a simple test which fixed the date of ovulation make the method more reliable? Such a test would accurately date and delimit the "late safe days" before the onset. But it might not help much to demarcate the "early safe days" which follow the end of menstruation. If ovulation were delayed, the woman would be uncertain of her position.

There is still much to be learned from a large enough sample of couples who would keep careful calendars and scrupulously abstain during the prescribed "baby days." It is to be hoped that further experiments designed to elucidate some of these problems will be carried out among women in India and other countries who, for religious or other reasons, prefer the rhythm method to others.

The main conclusion which I hope will be drawn from this article is that the Indian Government have put us all in their debt by sponsoring these two experiments and that, despite their abrupt termination, the effort has been thoroughly worth while.

I am deeply indebted to Mrs. Avabai Wadia for her kindness in critically reading these articles in typescript.